

**AMENDMENTS TO THE CLAIMS**

**1-10. (Cancelled)**

**11. (Currently Amended)** A heat resistant, rotary motor molecule  $V_1$ -ATPase, which is a  $V_1$  portion of a  $V_0V_1$ -ATPase derived from the thermophile bacteria, *Thermus thermophilus*, and is a complex molecule having three A subunits, three B subunits and one D subunit, wherein:

the A and B subunits are arranged alternately to form a hexamer cylinder, and the D subunit is embedded in the central cavity of the cylinder,

each A subunit has the amino acid sequence of SEQ ID NO: 3, each B subunit has the amino acid sequence of SEQ ID NO: 4 and the D subunit has the amino acid sequence of SEQ ID NO: 5, and

~~constituting the  $V_1$  portion of a  $V_0V_1$ -ATPase, wherein the A subunits have two~~  
substitutions, an at least one substitution of Ala residue for the 232nd Ser residue and Ser residue for the 235th Thr residue in SEQ ID NO:3.

**12. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 11, wherein at least one of the A subunit and the B subunit thereof is fixed on a substrate.

**13. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 12, which is fixed on the substrate via a His tag bound to the N terminal of the A subunit.

**14. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 11, to which a D subunit is bound with a joint material.

**15. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 12, to which a D subunit is bound with a joint material.

**16. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 13, to which a D subunit is bound with a joint material.

**17. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 14, wherein the joint is bound to at least one of Cys residue substituted for the 48th Glu residue and Cys residue substituted for the 55th Gln residue in SEQ ID NO: 5.

**18. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 15, wherein the joint is bound to at least one of Cys residue substituted for the 48th Glu residue and Cys residue substituted for the 55th Gln residue in SEQ ID NO: 5.

**19. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 16, wherein the joint is bound to at least one of Cys residue substituted for the 48th Glu residue and Cys residue substituted for the 55th Gln residue in SEQ ID NO: 5.

**20. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 17, wherein all Cys residues in the A subunit and the B subunit are replaced by non-Cys residues.

**21. (Currently Amended)** ~~he~~The rotary motor molecule  $V_1$ -ATPase of claim 18, wherein all Cys residues in the A subunit and the B subunit are replaced by non-Cys residues.

**22. (Previously Presented)** The rotary motor molecule  $V_1$ -ATPase of claim 19, wherein all Cys residues in the A subunit and the B subunit are replaced by non-Cys residues.